ABSTRACT

Title: Expanded diagnostic approach to hepatitis E virus detection in patients with acute on chronic liver failure - a pilot study.

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Introduction: Acute decompensation of pre-existing chronic liver disease (CLD), known as acute on chronic liver failure (ACLF) is associated with high mortality. Hepatitis E virus (HEV) as a potential cause in our centre was studied.

Objectives: To evaluate the role of HEV in ACLF patients using a quantitative HEV PCR, HEV antigen ELISA and two IgM anti-HEV antibody detection ELISAs.

Materials and Methods: In this prospective cross-sectional study, blood and stool samples were collected from 50 ACLF (cases) as defined by standard guidelines and 50 patients with stable CLD (controls) from January 2015 to August 2016, after obtaining consent from all the cases and controls.

A real time polymerase chain reaction (PCR) for quantification of HEV RNA in plasma and stool was employed. Additionally, WANTAI HEV antigen ELISA and two IgM detection ELISAs of different formats (MP Diagnostics HEV IgM ELISA and WANTAI HEV IgM ELISA) were compared using plasma from cases and

controls. Necessary clinical information was sourced from the hospital records of the cases and controls recruited for the study.

Results and Discussion: Ethanol alone was attributed as a cause of underlying CLD in 60% of cases and 24% of the controls. Ethanol was the leading cause of acute insult in ACLF (54%) cases. HEV infection accounted for 20% of ACLF cases. Other causes were hepatitis A and hepatitis B infection, drugs and autoimmune hepatitis. Co-infection with HEV in HBV and HCV patients were seen in this study.

Ten ACLF patients (20%) had 1-3 markers of HEV versus two (4%) among controls (p= 0.0138). Among ACLF cases, one had HEV viremia (403 IU/ml), faecal shedding (2,790 IU/ml) and detectable HEV antigen.

MP Diagnostics HEV IgM ELISA was more sensitive while the WANTAI HEV IgM ELISA (IgM capture assay) was more specific. Agreement between both these assays was 0.638 (kappa value).

Conclusion: This study shows that alcohol is a major contributing factor for ACLF. Among infectious causes, HEV have a significant role in causing ACLF thus suggesting a need for a vaccination in such patients.

Key words: Hepatitis E virus, HEV RNA, antigen detection, acute on chronic liver failure (ACLF)

Funding: Fluid research grant, IRB Min No: 9196.